Contents

List of Figures xv
Foreword xxv
Francesco d'Errico
Preface xxix
Andy Lock
Acknowledgments xxxiii
List of Contributors xxxv
Abstracts and Keywords xxxix
Introduction: Current Topics and Debates in Human Symbolic Evolution lxvii
Nathalie Gontier, Andy Lock, and Chris Sinha

PART 1: STUDYING SYMBOLISM: EPISTEMOLOGICAL CONSIDERATIONS

1. The Evolution of the Biological Sciences 3
Nathalie Gontier

2. The Evolution of the Symbolic Sciences 27
Nathalie Gontier

3. A Timeline for the Acquisition of Symbolic Cognition in the Human Lineage 71
Ian Tattersall

4. Behavioral Modernity, Evolutionary Synergies, and the Symbolic Species 97
Ana Majkić

5. The Aboutness of Language and the Evolution of the Construction-ready Brain 133
Michael A. Arbib

6. The Evolution of Language and Speech: What We Know from Genetics 161
Antonio Benítez-Burraco and Dan Dediu

PART 2: PATHWAYS TO SYMBOLIZATION: PSYCHOLOGICAL CONSIDERATIONS

7. The Evolution of Human Life Course: The Role of Culturally Driven Plasticity 187
Francesco Suman

8. Artifacts, Symbols, and the Socio-cultural Dynamics of Niche Construction 217
Chris Sinha

9. Evolution of Intentional Teaching 237
Peter Gärdenfors and Anders Högberg

10. Intersubjectivity Is Activity Plus Accountability 259
N. J. Enfield and Jack Sidnell

11. The Symbolic Revolution: A Sexual Conflict Model 289
Camilla Power, Ian Watts, and Chris Knight

12. Primate Parents: Theories, Bias, and Change in the Study of the Evolution of Parenting 311
Maria Botero

PART 3: SYMBOLIC LIFEWAYS: ANTHROPOLOGICAL CONSIDERATIONS

13. Art, Sign, and Representation 331
Elisabeth V. Culley and Iain Davidson

14. Symbols and Material Signs in the Debate on Human Origins 369
Antonis Iliopoulos and Lambros Malafouris

15. Culturing the Paleolithic Body: Archaeological Signatures of Adornment and Body Modification 400
April Nowell and Amanda Cooke

16. The Evolution of Music: The Development of Sonic Representation and Meaning 429
RUPERT TILL

17. Symbolism and Archaeoastronomy in Prehistory 455
FABIO SILVA, FERNANDO PIMENTA, AND LUÍS TIRAPICOS

18. Exploring the Evolutionary Pathways from Number Sense to Numeracy 481
ROSLYN M. FRANK

PART 4: GROUNDING SYMBOLISM: ETHOLOGICAL CONSIDERATIONS

19. How Viruses Made Us Human 517
GUENTHER WITZANY

20. Animal Signals and Symbolism 535
ULRIKE GRIEBEL AND D. KIMBROUGH OLLER

21. Emotion Expression, Empathic Reception, and Prosocial Behavior: Are They Linked in Evolution? 557
AUGUSTA GASPAR

22. Primate Cognition in Captivity 585
DAVID A. LEAVENS AND KIM A. BARD

23. Kanzi or Can't He? Animal Language Studies 611
HEIDI LYN

24. Artifact, Praxis, Tool, and Symbol 645
LANA M. RUCK AND NATALIE T. UOMINI

PART 5: FROM PROTOLANGUAGE TO LANGUAGE: LINGUISTIC CONSIDERATIONS

25. The Narrative Origins of Language 679
FRANCESCO FERRETTI

26. Pantomimic Conceptions of Language Origins 701
SŁAWOMIR WACEWICZ AND PRZEMYSŁAW ŻYWICZYŃSKI

27. On the Structure of Early Language: Analytic versus Holistic Language Processing and Grammaticalization 731
Tania Kuteva and Bernd Heine

28. Gesture Is an Intrinsic Part of Modern-day Human Communication and May Always Have Been So 759
Susan Goldin-Meadow

29. Ontogenetic Origins of Infant Pointing 785
Ulf Liszkowski and Johanna Nuria Rüther

30. Reconstructing the Origins of Language Families and Variation 811
Gerd Carling, Chundra Cathcart, and Erich Round

PART 6: EXPANDING SYMBOLISM: SOCIO-TECHNOLOGICAL CONSIDERATIONS

31. The Origins of Money and Its Role in Modernity 841
Todd Oakley

32. Force Fields of the Modern: The Symbolic Contestation of Power 865
Prem Poddar

33. The Evolution of Writing Systems: An Introduction 893
Alex de Voogt

34. Archewriting: The Symbolic Evolution of Script and Narrative 915
Rukmini Bhaya Nair

35. Cybercultures 965
Sverker Johansson and Ylva Lindberg

36. Transcending the Rational Symbol System: How Information and Communication Technology Integrates Science, Art, Philosophy, and Spirituality into a Global Brain 991
Francis Heylighen

37. Technoscience, Transhumanism, and Telos 1027
Natasha Vita-More

38. Metaphor, Myth, and Symbol in the Grain of Time 1053
Chris Sinha

Index 1075